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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,637	12/23/2005	Koji Kadono	S1459.70074US00	5368
23628 7590 09/19/2008 WOLF GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206				
EXAMINER				
WILCZEWSKI, MARY A				
ART UNIT		PAPER NUMBER		
2822				
MAIL DATE		DELIVERY MODE		
09/19/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/540,637

**Applicant(s)**

KADONO ET AL.

**Examiner**

M. Wilczewski

**Art Unit**

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 June 2005 and 23 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 and 12-22 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 9-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 23 June 2005; 23 October 2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

**This Office action is in response to the filing of this application on 23 December 2005. Claims 1-22 are pending.**

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 5, 7, 8, 12-18, 20, and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Mancevski, US Patent 6,146,227, equivalent to WO 00/19494, cited by Applicant.

Mancevski discloses a method of producing a microstructure which comprises a step of making pores in a substrate to become a mold by irradiation with a focused energy beam and a step of growing a microstructure (carbon nanotubes) in the pore, see figure 2 and column 3, lines 11-51; column 4, lines 40-45; and column 6, lines 30-51.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-8, 12-18, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mancevski, US Patent 6,146,227, equivalent to WO 00/19494, cited by Applicant, in view of Chen et al., US Patent 7,002,820.

Mancevski discloses a method of producing a microstructure which comprises a step of making pores (holes) in a substrate to become a mold by irradiation with a focused energy beam and a step of growing a microstructure (carbon nanotubes) in the pore, see figure 2 and column 3, lines 11-51; column 4, lines 40-45; and column 6, lines 30-51. Although Mancevski teach that an array of pores (holes) are formed to accommodate the AFM tips, see column 1, lines 21-27, and column 6, lines 52-60, Mancevski does not teach that the pores are made at intervals of 100 nm. First, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed spacing of the pores, since Applicant has not disclosed that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another spacing dimension.

Second, it is known to form AFM tips in arrays with the tips spaced from 1-100 nm apart, as taught by Chen et al., see column 3, lines 54-65, and column 5, lines 3-14. Therefore, it would have been obvious to one skilled in the art to space the tips formed in the known method of Mancevski at intervals of 100 nm, since this spacing of AFM tips is known in the art and used in the fabrication of atomic force microscopes, as evidenced by Chen et al.

Claims 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mancevski, US Patent 6,146,227, taken alone or in combination with Chen et al., US Patent 7,002,820 as applied to claims 2 and 18 above, and further in view of Okunuki et al., US Patent 5,233,196.

Mancevski and Chen et al. are applied as above. Neither teaches that the energy beam contains the claimed ions recited in claims 3 and 19. However, it is known to use energy beams comprising silicon ions, see Okunuki et al., column 7, lines 39-51. It would have been well within the purview of the skilled artisan to use the claimed ions, especially silicon, to form the e-beam used in the known method of Mancevski, since it is known to form electron beams containing these ions.

#### ***Allowable Subject Matter***

Claims 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: None of the references of record teach or suggest precipitating catalyst material at the bottom of the pores by irradiating the pores with a focused energy beam in an atmosphere of a gas as a raw material of the catalyst.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited references disclose the state of the art with respect to energy beams and atomic force microscopes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (571) 272-1849. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. Wilczewski/  
Primary Examiner, Art Unit 2822